Atmos. Chem. Phys. Discuss., 7, S3279–S3280, 2007
www.atmos-chem-phys-discuss.net/7/S3279/2007/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "A scheme for calculating soil moisture content by using routine weather data" *by* K. Z. Shang et al.

Anonymous Referee #2

Received and published: 21 July 2007

This paper presents a scheme to compute the soil moisture from the routine meteorological monitoring data for using in the sand and dust storm forecasts. Generally speaking, this is a very new method to provide the soil moisture data for the dust storm forecasts in case there is no soil module in the system to compute the soil moisture based on the physical mechanism. There are a number of points that need to be addressed before its publication in ACP. Specifically:

(1) This special issue is for the CUACE/Dust system. What is the dust event operational forecasting system (DOFS) of the National Meteorological Center in China? It would be nice to show the application of this scheme in the CUACE/Dust system.

(2) Figure 3 showed the soil moisture calculated from the proposed scheme. Please

mark the unit of soil moisture in the figure. The scale of the soil moisture used in the figure needs to be changed. A scale between 0.1 and 5 was not appropriate. Moisture in the range of 0.1 to 5% is the most sensitive for any soil dust emission schemes. More details in this range need to be shown. Beside this scale problem, it seems that this scheme has some problems in calculating the soil moisture over the desert areas where the soil moisture is usually very low. This scheme, however, predicts a soil moisture of more than 10% in some deserts in China. Why?

(3) Soil moisture observations from the agro-meteorological stations have some bias compared to the natural soil moisture in the desert areas due to the irrigation practice. This may reflect the problem in Figure 3. Comparison with other data, such remote sensing data, would help to validate the scheme for using the dust storm forecasts. It is suggested that results from this scheme be compared with other type of soil moisture data.

(4) Figure 4 showed the comparison of dust storm forecasted from two soil moisture inputs. Improvements are seen from the figure. However, large differences between these two forecasts over the Pacific and part of India were shown up. This seems rather strange. An explanation is needed.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 7451, 2007.